

FIG. 1

REGIONAL FACTORS

terrain including mountains, hills and trees

signal reflections off buildings or other structures

EMF interface

microwave interference

radio frequency interference

mixing (channel overlap or frequency separation) of an interfering signal with the desired signal resulting in intermodulation and added noise

200

DYNAMIC FACTORS

weather

storms

humidity

seasonal variations

220

RETRANSMISSION FACTORS

from transmitter to transmitter to set-top box

from transmitter to satellite to terrestrial set-top box

from transmitter to satellite to transmitter to set-top box

240

FIG. 2

Error Correction Engine

controls and optimizes bandwidth and Quality of Service (QOS) of a given broadcast based on regional factors including terrain, dynamic factors including weather and season, and retransmission factors

compiles data on reported factors and predict unreported factors that cause data transmission errors

employs error correction on data to be transmitted, based on at least one of the data on the reported factors and the unreported factors

utilizes error correction coding and error detection coding

utilizes Forward Error Correction (FEC) and carouselling

dynamically adjusts error correction levels

utilizes convolutional (tree) codes and block codes

no other error analysis input is required for error correction

FIG. 3

$$D(t) = D_r(t) + D_p(t)$$

$$D_r(t) = D_{r(s=regional\ data)}(t) + D_{r(s=environmental\ data)}(t)$$

$$= D_{r(s=terrain)}(t) + D_{r(s=weather)}(t) + D_{r(s=atmospheric\ data)}(t) + D_{r(s=sunspot\ activity)}(t) + D_{r(s=keplerian\ data)}(t) + D_{r(s=retransmission\ factors)}(t)$$

$$D_p(t) = D_{p(s=regional\ data)}(t) + D_{p(s=environmental\ data)}(t)$$

$$= D_{p(s=terrain)}(t) + D_{p(s=weather)}(t) + D_{p(s=atmospheric\ data)}(t) + D_{p(s=sunspot\ activity)}(t) + D_{p(s=keplerian\ data)}(t) + D_{p(s=retransmission\ factors)}(t)$$

Key:

D= data

t = time

r= reported

p=predictive

s= source

FIG. 4

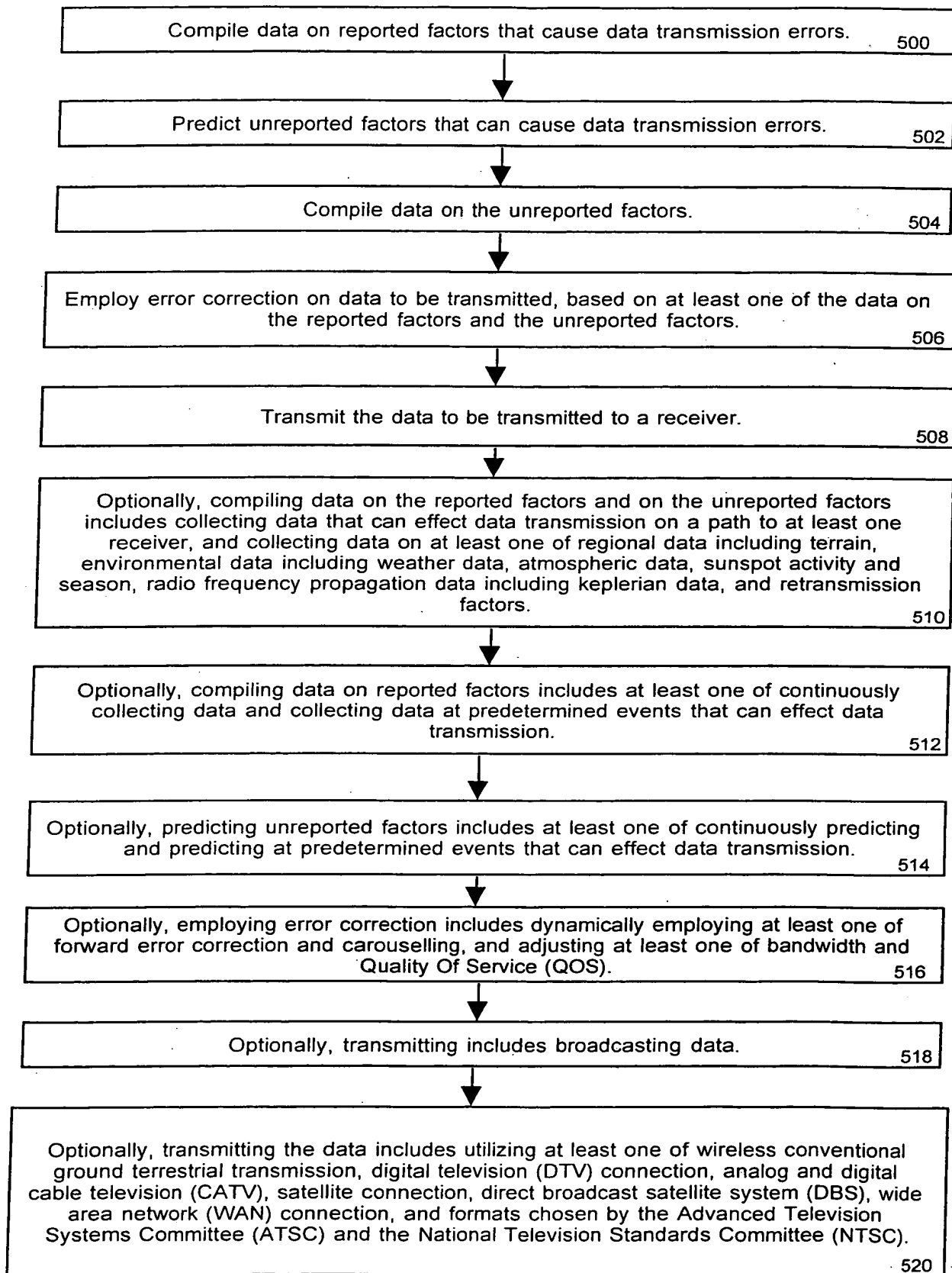


FIG. 5